The Protection of Ontario's Groundwater and Intensive Farming

Special Report to the Legislative Assembly of Ontario

Submitted by Gord Miller, Environmental Commissioner of Ontario
July 27, 2000

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July 27, 2000

The Honourable Gary Carr
Speaker of the Legislative Assembly
Room 180, Legislative Building
Legislative Assembly
Province of Ontario
Queen's Park

Dear Mr. Speaker:

In accordance with section 58(4) of the *Environmental Bill of Rights, 1993*, I present the attached Special Report of the Environmental Commissioner of Ontario for your submission to the Legislative Assembly of Ontario.

This Special Report concerns two issues that are related to the Walkerton investigations by the Ontario Provincial Police and the Office of the Chief Coroner and the public inquiry by the Honourable Justice Dennis O'Connor inquiry announced in June. I am releasing this report to ensure that my obligations to report first to the Legislature are respected.

Sincerely,

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Special Report to the Legislative Assembly of Ontario

Introduction

The key goal of Ontario's *Environmental Bill of Rights (EBR)* is to protect, conserve and restore Ontario's natural environment for the benefit of all Ontarians, and for future generations. Another essential goal of the legislation is to protect the right of Ontarians to a healthful environment. The *EBR* explicitly states that the Ontario government has the primary responsibility for achieving these goals.

The *Environmental Bill of Rights* also recognizes that the people of the province have a responsibility and a right to take part in decisions about environmental quality. To ensure that the environmental goals of the *EBR* are achieved in an open and transparent manner, the legislation provides minimum levels of public participation when government makes important decisions about the environment.

My mandate as Environmental Commissioner of Ontario is to review how provincial ministries carry out the requirements of the *Environmental Bill of Rights*, and to report to the Legislative Assembly annually. The *EBR* also enables me to submit a special report to the Speaker of the Assembly at any time, on any matter related to the *Environmental Bill of Rights* that I feel should not be deferred until the release of my annual report.

This is my first special report since I assumed my duties as Commissioner on February 1, 2000. It concerns two issues: groundwater protection and intensive farming. These two issues are related to the Walkerton investigations by the Ontario Provincial Police and the Office of the Chief Coroner and the public inquiry headed by the Honourable Justice Dennis O'Connor announced in June. They are draft documents, written before the tragedy in Walkerton. I am releasing this report to ensure that my obligations to report first to the Legislature are respected, and to help facilitate informed public participation and debate on these issues.

The Protection of Ontario's Groundwater

Groundwater is important to the economic and social well-being and the health of many people in Ontario. Nearly three million people depend on groundwater as their main source of domestic water, and it's used extensively for irrigating crops and for supplying drinking and bathing water for livestock operations. A wide variety of commercial operations also use groundwater, including industrial facilities, water bottling plants, golf courses, and aggregate pits.

Groundwater sustains ecosystems by releasing a constant supply of water into wetlands and contributing up to 20 per cent of the flow of headwater streams. In some regions of the province, during dry periods when surface water flows diminish, most of the stream flow can be attributed to groundwater. Groundwater is also important for water quality. The constant flow and quality of groundwater aquifers and headwater streams provide habitat for fish, wildlife and flora and furnishes ecological and aesthetic values that benefit all Ontario residents.

Adequate quantities of clean groundwater are needed to support these human and ecological needs. Underground aquifers are recharged mainly by rainfall and snow. As long as the water contained in these aquifers is not extracted faster than it is replenished, groundwater is a renewable resource. However, housing development and the intensification of land use in rural southern Ontario are placing extraordinary demands on groundwater, creating concern that some aquifers are being depleted faster than they can be recharged.

For example, certain commercial operations, especially water bottling plants, consume 100 per cent of the groundwater they extract. When water is used for irrigation, over 70 per cent of the water extracted evaporates or is lost to runoff. Industrial and municipal uses consume approximately 10 per cent of the extracted water. At the same time, agricultural land and green space are being transformed into built-up areas. Land that has been paved over or otherwise built up has a reduced capacity to absorb rain water and return it to aquifers, resulting in precipitation running off directly to streams.

In addition, the quantity of groundwater has important implications for water quality because reduced flows can aggravate the effects of contamination. Groundwater may become contaminated by leaking underground storage tanks, farming activities, leachate from landfills, discharges and spills from industrial facilities, and pesticides and fertilizers from golf courses. Many rural residents rely upon septic tanks which, if not well-maintained, can threaten groundwater quality.

Given the environmental and economic importance of groundwater, the Ontario government, together with other stakeholders such as municipalities, industry, farmers and environmental groups, must ensure that these resources are protected and managed for the benefit of present

and future generations. However, the government does not currently have a comprehensive strategy in place to protect groundwater. In our previous four annual reports, the Environmental Commissioner of Ontario (ECO) has urged the Ontario government to develop a groundwater management and protection strategy in consultation with key stakeholders and the public.

What would a groundwater management and protection strategy look like?

In April 1997, the ECO suggested that a groundwater management and protection strategy could contain many interrelated elements such as:

- a publicly accessible inventory of groundwater resources and a data management system;
- a long-term monitoring network of water levels for major aquifer systems;
- a system to identify and protect sensitive aquifers and groundwater recharge areas;
- an inventory of current and past uses of groundwater and sources of groundwater contamination and an evaluation of their potential effects on health and ecosystems, including cumulative impacts;
- a strong regulatory program aimed at preventing contamination;
- an economic assessment of groundwater value, including current and replacement value;
- a means of coordinating decision-making between all ministries and agencies that have jurisdiction over groundwater.

In their March 1999 reports to the ECO, the Ministry of Municipal Affairs and Housing (MAH) and the Ministry of Natural Resources (MNR) told the ECO that they are "active partners" with the Ministry of the Environment (MOE), which is "developing" a groundwater strategy. Yet, despite assurances from the ministries that they have been working on such a strategy, one has not been introduced. The contaminated-water tragedy in Walkerton in late May 2000, is thought to be connected to contamination of local groundwater supplies by runoff from local farms, and suggests that the need to protect groundwater aquifers is as great as ever.

Competition for Groundwater

In many parts of the province, rural residents and businesses which once had extensive access to groundwater are now finding that they must share existing resources with growing numbers of commercial and suburban users and more intensive farm operations. In some cases, disputes have erupted. Over the past two years, lower than average levels of precipitation and higher than average temperatures in southern Ontario have exacerbated these disputes.

Media reports from southwestern Ontario during the reporting period illustrated the conflicts that result from competition for groundwater. For example, in early 2000 some farmers in the region expressed concern that water-taking limits imposed by MOE would impede their ability to irrigate crops during the peak summer growing season. MOE later relaxed the limits during these months. In return, the farmers and local farm groups committed to developing a water

management strategy for the area. In other examples, local residents expressed concern about the potential for groundwater depletion and contamination from a food rendering plant and an aggregate operation, after both proponents submitted requests to MOE for permission to extract large quantities of groundwater.

Some residents have used the *EBR's* Environmental Registry comment opportunities to try to resolve their groundwater disputes. For example, eight different people wrote to MOE asking that an application for a permit to extract groundwater submitted by a golf course be denied, fearing that their domestic and farm needs would be compromised. The proponent later withdrew the application, partly in response to this public outcry. In three other cases, residents challenged MOE decisions to issue permits to extract groundwater by submitting applications for leave to appeal under the *EBR*.

Shared Management of Groundwater

Several provincial ministries share responsibility for aspects of groundwater management with municipalities, conservation authorities and other provincial and federal agencies. The key provincial ministries with interests in water management include: Environment; Natural Resources; Agriculture, Food, and Rural Affairs (OMAFRA); and Municipal Affairs and Housing. Adding to this complexity is the fact that the various federal, provincial and municipal ministries and agencies administer dozens of policies, bylaws, Acts and regulations related to groundwater.

a) *The Role of the Ministry of the Environment*

MOE plays a key role in managing groundwater by administering the *Ontario Water Resources Act (OWRA)*. The *OWRA* requires anyone that draws more than 50,000 litres of groundwater or surface water a day to obtain a permit to take water (PTTW). Historically, PTTWs were issued on a first-come, first-serve basis. When a conflict arose, MOE could use PTTWs to allocate available groundwater among competing users. In the past, the ecosystem functions of water were "also important considerations," but were not overriding factors.

In April 1999, MOE introduced a new regulation, the Water Taking and Transfers Regulation, that sets out criteria to be considered by MOE staff before issuing a PTTW. MOE staff must now give precedence to the impact the PTTW will have on the natural functions of the ecosystem. They also have the discretion to consider the impact on livestock uses, municipal sewage and water supply uses, other agricultural uses, and domestic wells, and whether it is in the public interest to grant the permit.

This new regulation is a positive step, but MOE has yet to implement some important changes that would support its effective implementation. For example, MOE has not updated its 1994 water management policies and guidelines document, leaving MOE staff, PTTW applicants, and

residents to interpret the new regulation on a case-by-case basis. There is a danger that it will not be interpreted in a consistent or appropriate manner, as noted in a December 1999 decision of the Environmental Appeal Board. The Board member noted that "MOE could, in the future, give greater weight to consideration of an 'ecosystem approach' in issuing these types of permits." In addition to updated policies, MOE staff require much better data on groundwater resources to evaluate PTTW applications effectively, including the cumulative impacts of numerous permits drawing water from the same aquifer or watershed.

MOE has not effectively used the *EBR* and the new Water Taking and Transfer Regulation to manage conflict over groundwater. In the past few years, many residents have contacted the ECO because they are concerned with the lack of information contained in Registry notices, the fact that notices on the Registry are the only forms of notice provided, and that the effect that their comments had on the decision-making process was not adequately explained. In some cases, the ECO encouraged these residents to write to MOE and request that the ministry provide enhanced public participation opportunities, such as public meetings, open houses or even mediation, on these proposals. To date, MOE has provided no evidence that these requests were seriously considered or that this type of public consultation has ever been carried out, as provided for by the *EBR*.

Conflicting information in the media about MOE policies on groundwater has added to the public's uneasiness. In the spring of 1999, the media widely reported that MOE had placed a moratorium on the issuance of new PTTWs in certain parts of the province. In response to ECO inquiries, MOE clarified that a "moratorium" was never imposed but indicated that the ministry was applying increased scrutiny to reviewing PTTW applications. Yet, for a number of months, many media sources and some government officials continued to report that a moratorium on the issuance of new PTTWs was in place. Furthermore, information about the changes to the PTTW review process was not posted on the Registry for public notice and comment.

In October 1999, the Minister of the Environment indicated that ministry staff had, as of May 1999, updated their procedures "to include strictly-defined time limits or expiry dates on permits." The ECO reviewed 60 PTTW decision notices posted between May 1999 and March 2000. Nearly half of these Registry notices failed to state the expiry date for the permit. Of the remaining notices that did list an expiry date, 13 were for 10 years, and the remainder were for varying time lengths, ranging from "indefinite" to one year.

The public needs to be confident that MOE is managing Ontario's groundwater effectively. Our review suggests that MOE must provide guidance to staff on how to apply the criteria set out under the new regulation and staff need better data to make informed decisions about groundwater.

b) The Role of Other Ministries

Other ministries also have important responsibilities for groundwater, but the variety of provincial laws, regulations and programs promotes conflicting goals with respect to groundwater.

For example, OMAFRA provides guidance to rural landowners on wells and encourages farming practices that minimize the impacts upon both groundwater quality and quantity. The ministry also administers the *Drainage Act*, which provides a legal mechanism for rural landowners to drain their lands and share the costs of doing so. Moreover, the *Drainage Act* encourages farmers to increase the productivity of agricultural lands by draining low-lying areas, potentially diverting water away from aquifers.

The Ministry of Natural Resources manages aquatic habitat and provides support to Conservation Authorities under the *Conservation Authorities Act* to enable them to control flooding and erosion and to conduct watershed planning. However, the *Aggregate Resources Act* administered by MNR promotes resource extraction activities that may alter groundwater flows.

The Ministry of Municipal Affairs and Housing has set out policies in the Provincial Policy Statement (PPS) under the *Planning Act* that municipalities must have regard to in making land use planning decisions that may affect groundwater. The PPS expresses the need for municipalities to protect water quality and quantity, but the policy is not legally binding and must only be considered by municipal planners and developers. Moreover, MOE, not MAH, is responsible for ensuring that this aspect of the PPS is adequately considered.

The Technical Safety and Standards Authority administers and enforces the *Gasoline Handling Act* on behalf of the Ministry of Consumer and Commercial Relations. The *GHA* and a range of regulations and policies under that Act contain a number of provisions related to prevention of gasoline spills by service station operators.

In summary, the current legal and policy framework for groundwater management is best characterized as fragmented and uncoordinated. The ministries do not have a publicly recognizable strategy that spells out how priorities are to be set and how ministries can coordinate their efforts and work with all stakeholders to address the conflicting goals contained in different laws and policies.

Recent Initiatives

Over the past several years, the ministries have undertaken several initiatives. These include:

- Provincial Water Protection Fund: In 1997, MOE established a $200-million fund, with more than $3.5 million of the total allocated for municipal groundwater management studies.

- The Municipal Watershed Action Guide: This guide, published in 1998, was prepared by MNR, MOE and MAH, to assist watershed residents, municipal councils and staff, non-government agencies, and educational institutions with the initiation, preparation and implementation of watershed management plans.

- An educational video entitled "Groundwater: Our Hidden Treasure": In October 1999, MOE released this video to increase awareness of the importance of groundwater to the environment, the economy and communities across Ontario.

During the reporting period, the ministries began to develop additional initiatives in an attempt to coordinate their efforts on groundwater management.

The Ontario Water Directors Committee

In February 1999, MOE, MNR, MAH, OMAFRA and the Ministry of Economic Development and Trade (MEDT) formed the Ontario Water Directors Committee. This committee was established to coordinate provincial water management programs and the government's response to water issues and is reportedly developing a provincial "strategic direction" on water. MOE has advised the ECO that the OWDC is developing an "integrated multi-year business plan for water management." However, to date, the ministry has not provided any details.

Drought Management Strategy

In response to dry weather conditions across much of Ontario during 1999 and 2000, the OWDC began to develop an Ontario Drought Management Strategy. In doing so, the ministries are consulting with key stakeholders and encouraging water conservation. For example, MOE is working with stakeholder groups to clarify how it proposes to administer modified PTTWs if dry conditions continue in the future.

A Groundwater Database

MOE acknowledges that it needs a comprehensive groundwater database for Ontario to understand the quality, location and quantity of available groundwater. Accordingly, the ministry is developing an aquifer mapping and groundwater monitoring network. This is an

important and long-overdue initiative. While MOE has committed six million dollars over three years to develop a monitoring program, it will likely take even longer to implement the system fully. In the meantime, water taking permits will continue to be granted and land use decisions will continue to be made without the benefit of comprehensive information.

What Do These Initiatives Mean?

In the late 1990s, the ministries' efforts on groundwater focused on process-based initiatives such as the provision of funding or the development of educational materials. Most of these initiatives create new tools and methods that are intended to assist municipalities and Conservation Authorities cope with ministry downloading of responsibilities to them.

More recent initiatives are being developed and implemented in a piecemeal way without adequate public notice or a meaningful opportunity for public comment. The OWDC and the establishment of a drought management strategy and groundwater database are all good first steps. But the lack of transparency in the development of recent initiatives makes it difficult for Ontario's citizens to understand the government's approach to managing groundwater and the implications for various groundwater users or the environment. Recent ministry projects and the current system of laws, regulations and policies amount to a confused patchwork.

Growing Risks If The Ministries Fail To Act

Ontario is in urgent need of a groundwater protection and management strategy, as evidenced by the demands being placed on Ontario's groundwater resources and the fragmented management of groundwater. A key element of this strategy is the need to protect groundwater supplies. There will be several negative consequences if the ministries fail to develop a groundwater strategy, including a growing number of conflicts over groundwater throughout rural Ontario and in urban areas that rely on groundwater for municipal and industrial purposes. There is a significant risk that many water taking permits will be granted and land use planning decisions made without adequate knowledge of groundwater availability. Furthermore, decisions about groundwater will not be made in a transparent and publicly accountable manner, contrary to the goals of the *EBR*.

To conclude, the contours of a clearly defined, comprehensive groundwater strategy have yet to emerge. The ECO urges the ministries to develop and implement a groundwater strategy in a timely manner in consultation with key stakeholders and the public. Moreover, the ECO encourages MOE to use enhanced public participation measures to keep the public informed and attempt to resolve conflicts before they become disputes.

Intensive Farming

Although agricultural production in Ontario has grown over the past few decades, the number of farmers in the province has declined during that same time, and the size of the average farm is increasing dramatically. Today, one-quarter of Ontario farms account for three-quarters of total farm revenues. While small family farms can still prosper in Ontario, new farms are often high-investment intensive operations, with very large numbers of livestock. Farms with 3,000 or more pigs or 1,200 cattle are increasingly common. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) suggests that one definition of an intensive farm might be a facility with over 10,000 pigs or 1,500 dairy cows. As this new form of farming spreads, environmental laws created when small operations were the norm may not address the associated environmental risks that come with more intensive farm operations.

The management of nutrients, particularly from manure, is one of the major sources of environmental risk in agriculture. When manure is incorrectly stored, handled, or spread onto land, it can harm soil, water, and air quality. Raw manure is traditionally spread onto farm fields as fertilizer, and this can be a reasonable environmental practice as long as farmers have sufficient acreage to absorb the manure of their livestock. But new large-scale farms produce vast quantities of manure and often do not have correspondingly large areas of farm land. Ontario currently has over 3.4 million hogs (approximately 400,000 in Huron County alone), and altogether, they produce as much raw sewage as the province's 10 million people.

Excess manure application can result in runoff to streams or leaching of nutrients from the soil into groundwater. The runoff spurs additional growth of algae and other aquatic plants, which may make water unusable for drinking or swimming. As well, excess aquatic plant growth reduces oxygen levels in the water, leading to fish-kill incidents. Excess nitrogen (as nitrate) can make groundwater unsafe to drink, particularly for infants and the elderly. Ammonium nitrate and ammonium sulfate emitted to the air from animal housing can be harmful to human and animal health. Epidemiologists have also recently found that Ontarians living in rural areas with high cattle density have elevated risk for toxic *E. coli* infections. The contamination of drinking water with *E. coli* that killed several residents of Walkerton, Ontario, in May 2000, is suspected by some experts to be related to livestock manure.

Residents in a number of rural Ontario municipalities have complained in recent years about the handling of manure at large livestock operations. Several large manure spills and leaks have increased the public's concern. Citizens' groups have recently formed in the London area, in Bruce County and also near Peterborough, all focused on problems related to intensive farming and manure management. Within the last two years, numerous counties and townships across rural Ontario have attempted to deal with the issue by passing bylaws, which either place short-term moratoria on new large livestock operations, or require manure management plans. These

municipalities have also urged the provincial government to take action, arguing that municipalities do not have the legislative tools necessary to deal with manure management.

OMAFRA has long promoted a voluntary approach to the management of environmental risks from manure. Since 1993, OMAFRA has provided technical support to the voluntary Environmental Farm Plan Program, which encourages farmers to develop Environmental Farm Plans, including manure management plans. The program has been funded by approximately 15 million federal Green Plan dollars from Agriculture and Agri-Food Canada. Under the program, farmers with peer-reviewed Action Plans are eligible for up to $1,500 of incentive funds to offset expenses. OMAFRA reported to the ECO in February 2000, that more than 17,000 people have attended Environmental Farm Plan workshops across Ontario, representing an estimated 30 per cent of Ontario's farm acreage. Farmers have also completed 7,000 environmental improvement projects, with the support of the incentive funds. It is not clear how many of these projects addressed manure management.

OMAFRA has avoided using regulatory measures to deal with manure management. There are no legally binding standards for constructing manure storage facilities or for the application of manure. For example, there are no rules forbidding the spreading of manure onto fields that are drained by tile drains. There are also no monitoring mechanisms to ensure that farmers use best practices for managing manure. Ontario environmental legislation also specifically exempts some aspects of manure management. For example, waste management requirements in the *Environmental Protection Act (EPA)* do not apply to animal waste (certificates of approval and manifests are not required).

In 1998, the *Farming and Food Production Protection Act* (*FFPPA*) strengthened the protection of farmers against complaints from neighbours. The new *FFPA* also stipulates that no municipal bylaw can restrict a normal farm practice if the practice is determined to be "normal" by the Normal Farm Practices Protection Board. The ECO's 1998 annual report noted that as a result of this new law, farm discharges may not be dealt with as vigorously as industrial discharges and emissions. The ECO said it would continue to monitor and report on the impact of this new law. In fact, this legislation has already been used to overturn a municipal bylaw attempting to control intensive farming operations in Biddulph township.

In 1998, the township of Biddulph, north of London, tried to restrict the size of farming operations to a maximum number of livestock, partly to protect local wells that rely on shallow aquifers - in some spots lying within six feet of the surface. The township also planned to require farmers to complete a nutrient management plan, and to own at least two thirds of the land base required for manure spreading, as determined by the nutrient management plan. A local hog farmer alleged that this bylaw restricted normal farming practice, and the Normal Farm Practices Protection Board agreed after a hearing. The Board decided that municipalities could in principle impose nutrient management plans upon intensive farming operations, but noted that most livestock farmers have informal plans which are rarely committed to writing.

The Board also decided it was not a normal farming practice to focus only on land actually owned by the farmer when calculating available tillable acreage for manure spreading. A local citizens' group is now challenging the decision before an Ontario appeal court, against the farmer and the Ontario Federation of Agriculture.

To deal with manure problems, the Ministry of the Environment has in some cases undertaken prosecutions and issued orders under the *EPA*. In 1998, MOE issued a Director's Order against a hog farmer with 1,000 pigs in Hope Township, requiring him to provide bottled water to seven families whose wells were contaminated. In 1999, MOE ordered the farmer to drill new deeper wells for each of the affected families. In 1999, a pork producer in the Chatham area was prosecuted successfully under the *Environmental Protection Act* for a discharge of approximately 1.5 million litres of pig manure, some of which reached a drain and Lake Erie. As well, Environment Canada charged a pig production facility under the *Fisheries Act* in 1999; it was the first prosecution of its kind in Ontario.

Other jurisdictions, including New Brunswick and Quebec, have created regulatory standards for manure management. In the United States, the Environmental Protection Agency has recently announced that large agricultural operations will be required to have permits under the National Pollutant Discharge Elimination System, as factories already do. Many American states also have regulatory requirements. About half require that farms have manure management plans. Some states also prohibit spreading of manure during the winter, when the risk of runoff from frozen ground is high.

In January 2000, OMAFRA began public consultation on intensive farming operations in Ontario, with the support of the Ministry of Environment, and with a proposal on the Registry. Six well-attended public meetings across rural Ontario addressed the environmental impacts of intensive farming such as water quality, damage to land, and odour. Many meeting participants supported a provincial regulatory system for manure management, and over 400 comments were submitted. OMAFRA received a summary report in April 2000. The Minister of Agriculture, Food and Rural Affairs has committed to the release of this report and the introduction of legislation on intensive farming by the summer of 2000.

In 1998, OMAFRA removed several environmental commitments from its Statement of Environmental Values (SEV), including the commitment to "ensure an environmentally responsible and sustainable agriculture and food system". The ECO's 1998 annual report noted that these changes were disappointing, and were not in keeping with the goal of the *EBR* to promote sustainability. The trend toward agricultural intensification is expected to continue over the next decade. Ontario residents have already shown concern about industrial-style agricultural operations, and it is likely that managing the environmental impacts of these operations will be of increasing concern to Ontarians over the next few years. It is also likely that Ontarians will expect OMAFRA to ensure an environmentally responsible and sustainable agriculture and food system.

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